



63 Zillicoa Street
Asheville, NC 28801
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Patient: **SAMPLE
PATIENT**

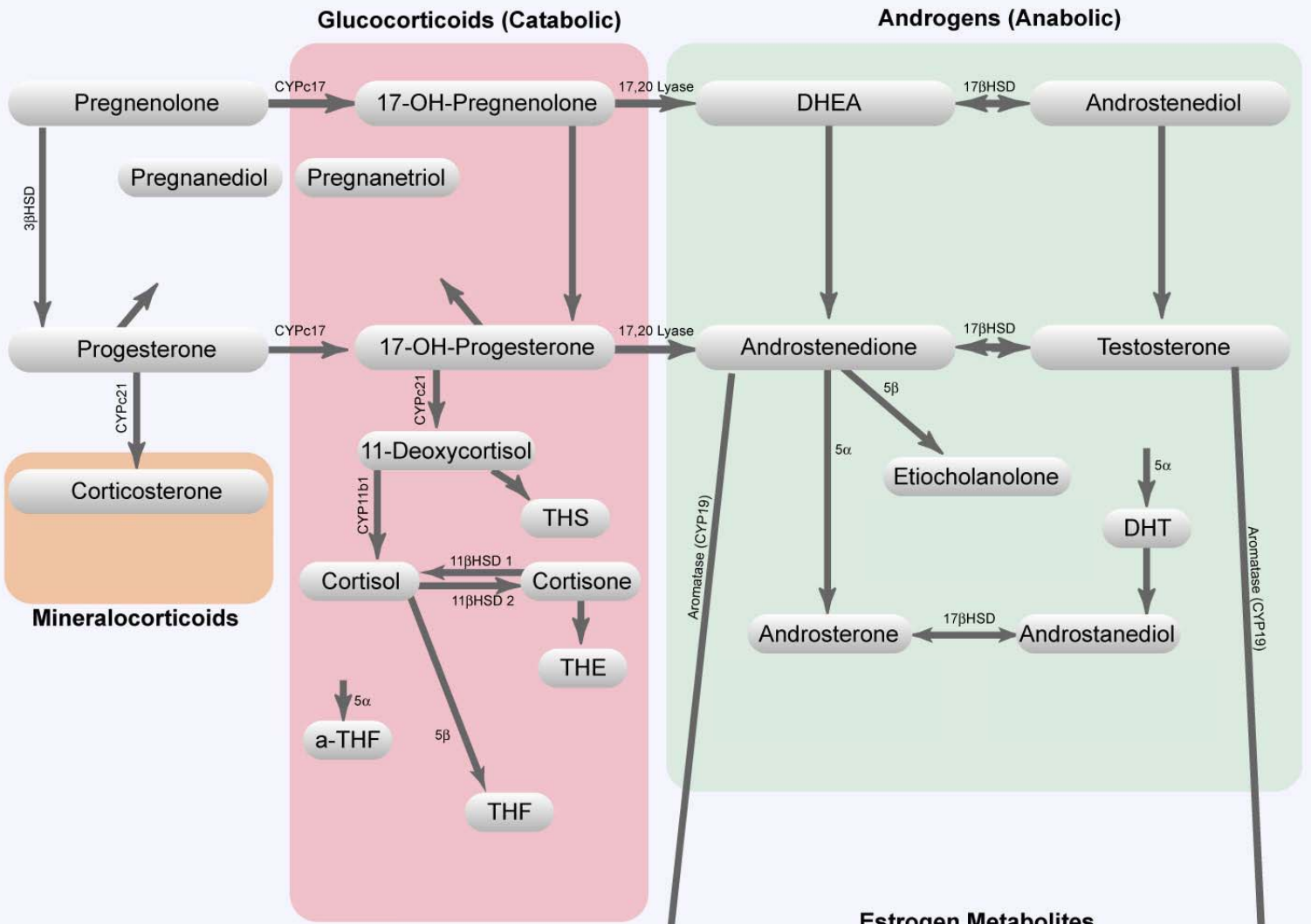
DOB:

Sex:

MRN:

Essential Estrogens

Steroidogenic Pathway At-A-Glance



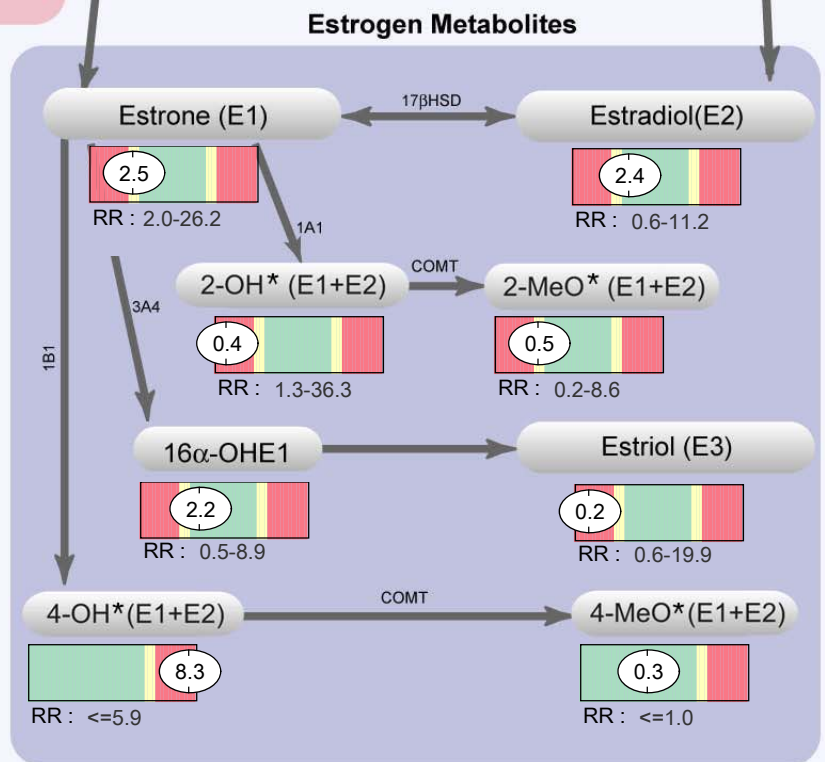
ENZYMATIC STEPS:

- 3βHSD = 3beta-Hydroxysteroid dehydrogenase
- 5α = 5alpha-Reductase
- 5β = 5beta-Reductase
- CYP11b1 = 11beta-Hydroxylase
- 11βHSD = 11beta-Hydroxysteroid dehydrogenase
- 17βHSD = 17beta-Hydroxysteroid dehydrogenase
- 17,20 Lyase = 17,20 Desmolase
- CYPc17 = 17alpha-Hydroxylase
- CYP19 = Aromatase
- CYP21 = 21-Hydroxylase

ESTROGEN METABOLISM:

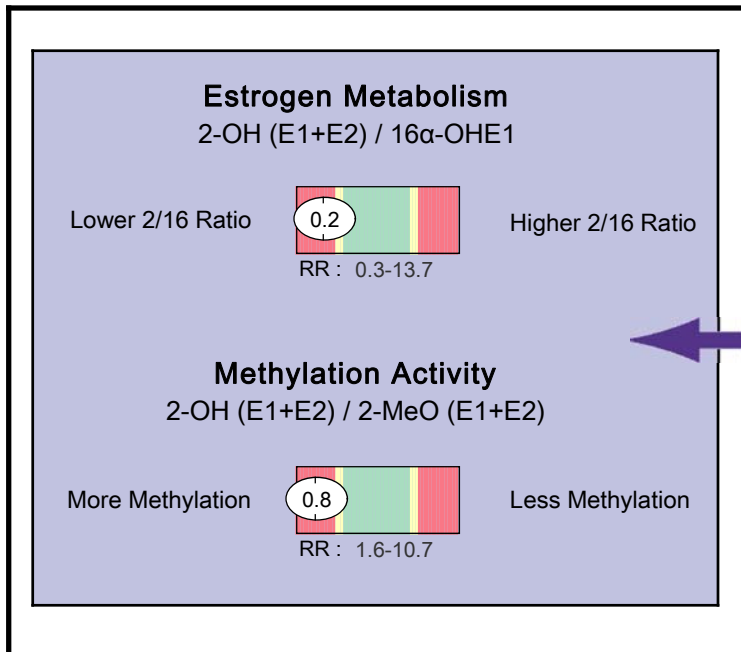
- 1A1 = Cytochrome p450 1A1 (CYP1A1)
- 3A4 = Cytochrome p450 3A4 (CYP3A4)
- 1B1 = Cytochrome p450 1B1 (CYP1B1)
- COMT = Catechol-O-Methyltransferase

KEY *OH = Hydroxy
*MeO = Methoxy

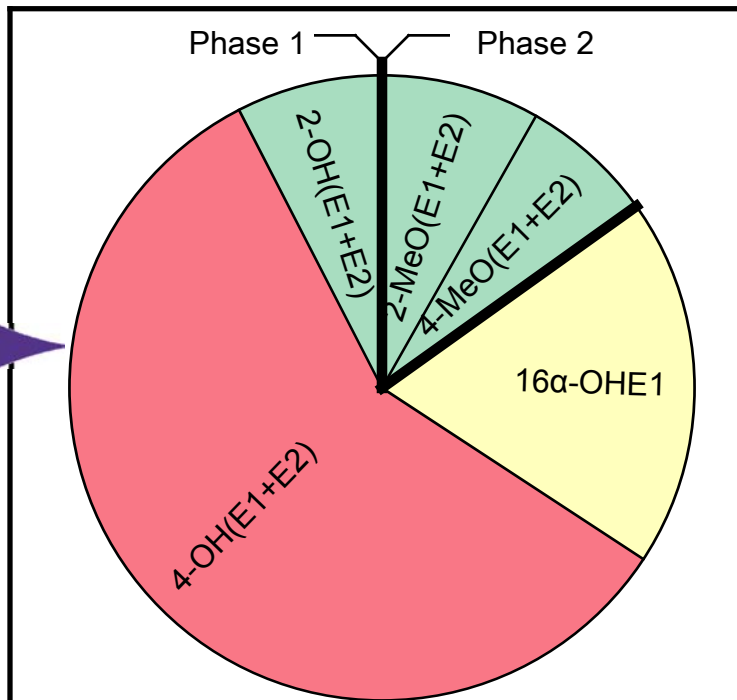


Interpretation At-A-Glance

Enzymatic Activity

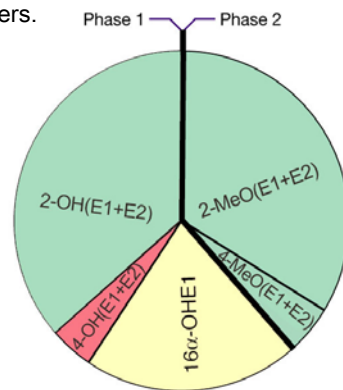


Estrogen Metabolism



This sample pie-chart reflects current scientific understanding of the association of specific estrogen metabolites with disease risk for hormone related cancers.

Metabolites in green have been associated in the literature with decreased risk; those in red, with increased risk. 16-OHE1 (in yellow) has mixed findings, some studies showing an association and many finding no association. The dark line separates Phase 1 and Phase 2 detoxification pathways.



Key



Patient: **SAMPLE
PATIENT**

DOB:

Sex:

MRN:

Methodology: GC-MS and LC-MS/MS; Specimen: 24 hour urine; Results normalized to volume

Estrogens

Estrogens

Reference Range

Estrone (E1)*

2.5

2.0-26.2 mcg/g Creat.

*Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	2.0-26.2 mcg/g Creat.
Menopause	1.1-26.2 mcg/g Creat.
Male	1.6-8.6 mcg/g Creat.

Estradiol (E2)*

2.4

0.6-11.2 mcg/g Creat.

* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	0.6-11.2 mcg/g Creat.
Menopause	0.6-15.4 mcg/g Creat.
Male	0.8-4.3 mcg/g Creat.

Estriol (E3)*

0.2

0.6-19.9 mcg/g Creat.

* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	0.6-19.9 mcg/g Creat.
Menopause	0.7-30.8 mcg/g Creat.
Male	0.3-5.1 mcg/g Creat.

Estrogens

Estrogen Metabolites

Reference Range

2-Hydroxyestrone + 2-Hydroxyestradiol [2-OH(E1+E2)] *	0.4	1.3-36.3 mcg/g Creat.
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* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	1.3-36.3 mcg/g Creat.
Menopause	0.9-43.8 mcg/g Creat.
Male	0.7-12.5 mcg/g Creat.

16 α -Hydroxyestrone (16 α -OH E1)*	2.2	0.5-8.9 mcg/g Creat.
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* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	0.5-8.9 mcg/g Creat.
Menopause	0.4-7.7 mcg/g Creat.
Male	<=2.0 mcg/g Creat.

4-Hydroxyestrone+4-Hydroxyestradiol [4-OH(E1+E2)] *	8.3	<= 5.9 mcg/g Creat.
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* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	<=5.9 mcg/g Creat.
Menopause	<=8.8 mcg/g Creat.
Male	<=1.6 mcg/g Creat.

2-Methoxyestrone+2-Methoxyestradiol [2MeO(E1+E2)]*	0.5	0.2-8.6 mcg/g Creat.
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* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	0.2-8.6 mcg/g Creat.
Menopause	0.3-5.9 mcg/g Creat.
Male	0.2-2.5 mcg/g Creat.

4-Methoxyestrone+4-Methoxyestradiol [4MeO(E1+E2)]*	0.3	<= 1.0 mcg/g Creat.
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* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	<=1.0 mcg/g Creat.
Menopause	<=1.0 mcg/g Creat.
Male	<=1.0 mcg/g Creat.

Ratios

2-OH(E1+E2) / 16 α -OHE1*	0.2	0.3-13.7
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* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	0.3-13.7
Menopause	0.3-15.1
Male	0.8-12.9

2-OH(E1+E2) / 2-MeO(E1+E2)*	0.8	1.6-10.7
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* Premenopause (luteal) reference range shown

Reference Ranges	
Premenopause	1.6-10.7
Menopause	0.4-11.6
Male	1.0-8.8